roform, while tissues containing alcohol keep steadily on the surface.

When the tissue is saturated with the etherized cloroform it should be transferred to pure chloroform and there left for a few minutes. Then drop in some pellets of soft paraffine and leave it for two hours or more, shaking occasionally. The whole should then be poured into a small melting pot and a quantity of imbedding material added. The melting pot should then be placed in the water bath at a temperature of about 60° C., and there left until all the chloroform has evaporated, which may be determined by the absence of smell of chloroform on shaking. If much imbedding material is required this process takes a day or two; it is therefore better, when the solution of imbedding material is fairly strong, to take out the tissue and put it direct into pure melted imbedding material. In any case no chloroform must remain in the material to be cut, as it makes it brittle. Generally speaking the more gradually these processes are passed through the better will be the result.

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SCIENTIFIC NEWS.

— At a meeting of the Glasgow Philosophical Society in December, a paper was read by Professor W. Dittmar on the general results of his chemical work in connection with the Challenger expedition. Professor M'Kendrick commented on the paper, and said that the question of the breathing of marine animals was one of very great interest, and they could see at once that before it could be examined they must know something about the proportion of the gases dissolved in sea water. On that point they had been without accurate data up to the time of the very elaborate researches of which they had received an account that night. One fact which struck him as a physiologist as being most remarkable, was the very small quantity of oxygen in sea water, although it was yet sufficient for the respiration of fishes and other creatures living in the ocean. In point of fact blood was much richer in oxygen than sea water. It seemed to him that what they needed next was a careful analysis of the gases as they existed in the blood of fishes, more especially in that of some of those fishes which had been found at the depth of 2570 fathoms, living in a medium where the pressure on the square inch of the body must be something like three tons, because they had supposed that the problem of breathing depended to a considerable extent upon the law of pressures. It was well known that life could be maintained with a small quantity of oxygen in the event of carbonic acid being removed, and it was probable that in the case of those fishes, while the percentage of oxygen

was small, the carbonic acid would at once be taken up, so that it did not accumulate in the immediate vicinity of the breathing apparatus.—*English Mechanic.*

— In an address delivered lately at Preston, after distributing the prizes to the students of the Harris Institute, Professor Tyndall spoke of the three great discoveries which in after time will be regarded as the glory of the present age, vis: those of the conservation of energy, the principle of evolution, and the germ theory of disease. The germ theory of disease in its earliest glimmerings appeared centuries ago; but William Budd was the first to see further than his contemporaries, and his grand generalization has been confirmed by experiment. So long ago as 1817 Schwann demonstrated that putrifaction was the work of living organisms, and in 1863, Pasteur followed with his far more elaborate researches. A high tribute was paid to Koch's researches. The immunity enjoyed by the vaccinated, Tyndall accounts for on the supposition that contagia being living things, demand certain elements of life, and when those are exhausted they can no longer live. To exhaust a soil, then, a parasite less vigorous and destructive than its virulent representative may suffice, and once the soil is exhausted the virulent type is powerless to injure. Such in substance is the germ theory of disease.

— At the Newport meeting of the National Academy of Sciences, Mr. Fairman Rogers referred to Mr. Muybridge's experiments made last summer on the motions of animals by instantaneous photography. No especially new system is used, but the apparatus has been perfected in many details, and dry plates are used, so that superior results may be looked for. While many instantaneous photographs of animals in motion existed before those made by Muybridge, they were mere isolated attitudes of motion, giving very little information, while his, being consecutive, and taken at equal intervals of space or time, give all the information regarding the different phases of the motion. It is perfectly possible to apply this method to the study of all kinds of motion, and it must come into use for that purpose. It would be useful, for instance, to study in this way the propelling action of the tails of fishes, with a view of determining the proper form for screw propellers, which will not only give good results in economic propulsion, but will avoid the vibrations accompanying high speed.

— Professor Bickmore, of the American Museum of Natural History, will give a course of ten lectures for the benefit of such teachers in the public schools as are required to deliver object lessons upon botany and zoölogy. The first six lectures will be devoted to human physiology and anatomy. The lectures are all to be illustrated by stereoscopic views, and in order to make them

as widely useful as possible, a copy of each one, together with a set of the stereoscopic slides which were used for its illustration, will be sent to each normal school in the State. The series, which begins on October 18, is the commencement of a course of lectures which is to extend over four years, and be conducted in the same way and for the same object. The Legislature has appropriated $18,000 to defray the expenses of these lectures.

— A tidal wave burst into the harbor of New Haven, Conn., at 11 o'clock, Dec. 22. It is now believed that there must have been a convulsion of the earth in Long Island sound, directly off the harbor, or near by, for at quarter past eleven a tidal wave, crowned with foam and fully eight feet high, came rolling into the bay from the south, traversing the entire length of the harbor, which is four miles long. It had a speed of about twelve miles an hour, and moved with an ominous rushing sound, like the blast of a hurricane, carrying destruction in its path.

— The second Abtheilung, *Arthropoda*, of the Zoologischer Jahresbericht for 1883, was issued in November. It has been prepared by Drs. Paul Mayer and W. Giesbrecht, assisted by a corps of specialists. It is a most indispensable work to the zoölogist; and this part is very full in abstracts of and reference to the entomological literature of 1883. It is a product of the zoölogical station at Naples.

— The Johns Hopkins University circulars for December contain abstracts of essays on the following topics: On a new law of variation, by W. K. Brooks; Method of formation of the trochosphere in Serpula, by W. H. Conn; The gill in Neptunea, by H. L. Osborn; On the presence of an intracellular digestion in Salpa; On the structure and affinities of Phytoptus, by J. P. McMurrich.

— By the death of Robert Alfred Cloyne Godwin-Austen, F.R.S., geology loses one of its most distinguished students. Mr. Godwin-Austen was born in 1808, and died on Nov. 25th, at his residence near Guildford. He was associated with the late Edward Forbes in work on marine zoölogy, and edited and continued Forbes' Natural History of the European seas.

— The professors of the Philadelphia Academy of Natural Sciences have organized themselves as a faculty and elected Professor D. G. Brinton dean, and Professor Angelo Heilprin, secretary.

— At a December meeting of the London Western Microscopical Club Mr. F. Cheshire showed some beautiful specimens of bacilli which produce disease among bees.

— The deaths are announced of two renowned physiologists, viz: Professor von Vierordt, of Tübingen, and Professor von Wittich, of Königsberg.

— Dr. Thomas Wright, F.R.S., of Cheltenham, in whom geology and palæontology lose a distinguished student, died in December last.

— Professor D. S. Jordan has been appointed president of the University of Indiana, at Bloomington.

— Erratum: on p. 109, line 15, for *bogs* read *bays.*

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PROCEEDINGS OF SCIENTIFIC SOCIETIES.

PHILADELPHIA ACADEMY OF NATURAL SCIENCES, May 29.—Mr. Ford announced the discovery of *Pholas truncata* in peat near Sea Isle city. Mr. Redfield said that he had found this species thirty years ago, closely packed in salt-water turf, near Rye, Long Island sound, and he believed the species might be found in similar locations all along the coast.

June 12.—Professor H. C. Lewis gave the results of his examination of dust from Krakatoa, taken from the rigging of the bark *William H. Besse.* By far the greater part is powdered glass, but crystals of transparent plagioclase, and irregular fragments of pyroxenic materials, probably augite and hypersthene, as well as grains of magnetite, occur. The dust does not at all resemble that described by Mr. Wharton, and collected in Philadelphia. The same speaker described a curious round, rock-like exposure of basalt at Blue Rock, Chester county, Pa.

June 19.—Professor Heilprin spoke of the great difference between the Foraminifera of the rotten limestone of Northeastern Mississippi and that of the ooze of the Gulf of Mexico. He also showed an example of *Calymene niagarensis,* taken from the Eocene above Vicksburg, but evidently washed down from the Silurian. Dr. McCook called attention to certain globular nodules of earth which were the cocoons of a tube-weaving spider of the genus Micaria. Spider cocoons, covered with scraped bark, old wood, etc., had been found before, but this was the first occasion in which a covering of mud had been found. The specimens were gathered upon fallen boards by Mr. F. M. Webster, assistant State entomologist of Illinois.

July 10.—Professor Heilprin showed the tail-piece of a trilobite found at the Delaware Water Gap. He proposed to name the species *Phacops broadheadii.* It is near *P. nasutus.* Its hori-